Day 99

Q. There is a hallway of length N−1 and you have M workers to clean the floor. Each worker is responsible for segment [Li?,Ri?], i.e., the segment starting at Li? and ending at Ri?. The segments might overlap.

Every unit of length of the floor should be cleaned by at least one worker. A worker can clean 1 unit of length of the floor in 1 unit of time and can start from any position within their segment. A worker can also choose to move in any direction. However, the flow of each worker should be continuous, i.e, they can't skip any portion and jump to the next one, though they can change their direction. What's the minimum amount of time required to clean the floor, if the workers work simultaneously?

main.py

```
for _ in range(int(input())):
    n,m = map(int,input().split())
    v = []

    for _m in range(m):
        x,y = map(int,input().split())
        v.append([y,x])

    v.sort()
    l = 0
    r = n - 1
    cnt = -1

    while(l <= r):
        mid = (l+r)//2
        seg = 1

        for i in range(m):
            if(seg >= v[i][0] or v[i][1] > seg):
                continue
            else:
                seg = min(seg + mid,v[i][0])

        if(seg == n):
            cnt = mid
            r = mid - 1
        else:
            l = mid + 1

    print(cnt)
```

output

```
3
10 3
1 10
1 5
6 10
3
10 1
2 10
-1
10 2
5 10
1 5
5
PS E:\Panku\Python>
```